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ABSTRACT

This management report from the Association of California Community College Administrators encourages institutions that have not already done so to purchase their own satellite dish, and points out how those already owning one may gain even greater advantage from its presence on campus. The three major types of services that provide current satellite programming to colleges are described--i.e., commercial networks specifically developed for the college market, college consortium networks developed for the college market, and commercial companies that assist any enterprise in offering a teleconference or other television event--and examples are given of specific providers and their services. A discussion of the multiple uses of satellite systems concludes the report, and information about the costs involved in purchasing a dish is appended. (RP)

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Management Report

1987-8/1

THE MANY USES OF A SATELLITE DISH

by

A. Robert DeHart
President, De Anza College

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Association of California Community College Administr

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FOREWORD

Although it has not been our practice to publish Management Reports during Summer, we justify this current exception by both its timeliness and the time constraints of budget building. In this instance, A. Robert DeHart makes a convincing case for institutions that have not already done so to purchase their own satellite dish, and points out how those already owning one may gain even greater advantage from its presence on campus. As indicated by the title, DeHart outlines the multiple uses of satellite systems, but beyond that, he identifies some key resources available to owners and provides specific information about the cost of purchasing a dish.

Readers who participated this past spring in the AACJC national teleconference on high school-community college articulation or any of the three video teleconferences over the new statewide Community College Satellite Network are already aware of the enormous potential for this system of communication. Others will have new opportunities to select from a minimum of 18 teleconferences in 1987-88 based on these models in addition to the programs already available through the networks and consortia enumerated below.

With the restoration of state funding for equipment, colleges are in a better position to make this kind of purchase now than at any other time in recent years. In reviewing equipment needs and allocations for the coming year, they are urged in the following report to invest in this promising technological development as a way of improving service to students and staff alike.

Bob DeHart is the founding president of De Anza College, now in its twentieth year. Located in the heart of Silicon Valley, the college is noted for staying in the forefront in the educational use of computers and television technologies. He is Project Director for the development of the Community College Satellite Network.

Ray Liedlich
Columbia College

THE MANY USES OF A SATELLITE DISH

by
A. Robert DeHart
President, De Anza College

In the spring of 1987, the California community colleges took a bold new step toward networking our 106 campuses via interactive video teleconferencing. Three video teleconferences were offered by the newly formed Community College Satellite Network to demonstrate the power of the medium for communication among our widely scattered colleges on a variety of important issues and professional development activities. The success of this pilot project has led to a Fund for the Improvement of Instruction grant that will underwrite twelve more teleconferences during the 1987-88 academic year where the primary emphasis will be on faculty and management development. In addition, the Chancellor plans one in the fall and one in the spring to keep everyone abreast of statewide issues as they arise and such groups as the Rural Colleges Consortium are funded for several more teleconferences. Also on the calendar are two national teleconferences sponsored by AACJC—one on adult literacy and one on economic development. From this menu a college can make an excellent supplement to their staff development program *if—if* the college has a "downlink" receive dish. Of course, there are other uses for a downlink dish than teleconferencing, many other uses. College staffs are generally not very knowledgeable about these varied uses that makes a downlink such a powerful learning resource, and that is the reason why ACCCA is publishing this Management Report.

Over forty colleges in California already have receive capability and the number is rapidly increasing. While one can always go to a neighboring college that has a dish to see a particular teleconference or program, the cost of owning one is so reasonable that staff and students should not have to travel to benefit from this new communication medium. The early adopters often benefit the most in any innovative effort because they shape the applications to suit their own situation. We urge you to become an early adopter and explore the many uses of a satellite dish. Certainly the community college system will become more coherent, more cooperative, and more politically powerful if a satellite network can be developed to include all our colleges.

SATELLITE COMMUNICATION IS BECOMING PERVASIVE

Business, government, and the media recognized the power of communicating by satellite in the 70s, and today hundreds of satellites ring the planet in orbits 22,300 miles in space serving these enterprises. It is not surprising that large corporations and the federal government were the early users of the technology simply because they were the only ones who could afford it. Mass manufacturing, however, has driven prices down in recent years until now the educational innovators are discovering the enriching and effective power of satellite communication. Slade and Sanders foresee, "Well before the next century we will see a global college with thousands of campuses around the world exchanging and sharing interactively through the satellites a dazzling array of international programming in every imaginable category."[1] Lest you think this a gross overstatement of technology zealots, stay tuned.

TUNE TO TELESTAR 301, TRANSPONDER 11, FREQUENCY 4120, VERTICAL POLARITY

Despite the complicated sounding jargon, accessing a satellite is as simple as using the remote control on a home television set. How does it work? A viewer punches appropriate coordinates into a remote control switch and the receive dish automatically seeks the right satellite and tunes in one of the thousands of programs being delivered daily by the necklace of satellites surrounding the earth. A dish can access any unscrambled program if it is tuned to the appropriate satellite. Commercial television, foreign broadcasts, teleconferences, sports events, Congressional hearings, major cultural events, and a multitude of private and public programs are there for the taking. Many of these events are entertainment, and while many have educational value, not enough are specifically designed for colleges and universities. But the number is growing.

For educators to originate programs for the college market, an "uplink" dish capable of transmitting a signal to a satellite is required. Uplinks are more expensive and there are far fewer of them than receive dishes, or "downlinks". While a good downlink can be purchased for $2,000 to $5,000, an uplink costs ten times that amount. In addition, a support studio is required for producing a program. Thus there are two costs for originating a teleconference: the cost of the technology plus the cost associated with presenting a program. Colleges and universities are developing networks so they may share the expenses. But the cost for equipment just to receive programs is inexpensive, and one should keep in mind when considering the uses a receive dish may have, that in addition to those programs specifically designed and marketed to colleges, there are hundreds of other good programs that are available for campus use. One need only peruse the satellite programming publications (such as *Orbit* which is nearer the

Satellite dishes have in recent years greatly dropped in size and price. They are simple to operate and are becoming commonplace in homes in remote areas, in entertainment places, in business and industry with sophisticated training programs, and in educational institutions.

size of a phone directory than to *TV Guide*) to discover the great potential for bringing the world to even the remotest campus.

While satellites provide accessibility on a scale not even imagined a few years ago, it is another feature, interaction, that makes this mode of delivery especially attractive to educators. When the combination of a satellite, television, and a telephone link are used together, people scattered over wide geographical areas can see and talk with one another at the same time. This event is called an interactive video teleconference. Such a teleconference originates in a television studio, a classroom, or a conference room where television cameras relay the program to an uplink dish which then transmits to an orbiting satellite. A receive dish at a remote site picks up the signal and sends it by coaxial cable into an auditorium or classroom where the program can be seen on television monitors. There may be one receive site or hundreds, it makes no difference. Each receive site is also connected by telephone to the originating studio so that questions can be asked live and on the air. Teleconferencing is simply participatory television. Viewers can be actively involved by asking questions, clarifying, or debating. It is a way of bringing topics to people instead of people to topics as is required in the face-to-face meetings for traditional conferences and workshops.

Easy communication among colleges without the need to travel, high quality staff development for faculty and administration, and the instructional delivery of telecourses to the remotest regions are destined to be the major educational uses of interactive video teleconferencing. When these teleconference uses are coupled with the accessing of the great diversity of cultural, educational, and entertainment events available, the satellite can truly be seen as a major new learning resource of the 80s and 90s for both students and staff.

DISHING IT OUT

Current satellite programming is provided to colleges by three major means:

- commercial networks specifically developed for the college market;
- college consortium networks developed for the college market; and
- commercial companies that assist any enterprise in offering a teleconference or other television event.

Unlike entertainment television or business teleconferences, programming designed for colleges is still in its infancy. However, experts tell us we're on the verge of an explosion in the use of satellite programming. Dean Robert Grey of UCLA asserts that a major breakthrough using satellite delivery will bring an enormous variety, both educational and entertaining, that "... we can only begin to imagine."[1] And it is surprisingly easy for colleges to gain access to this programming once the maze of acronyms is mastered.

Commercial Networks Dedicated To College Programming

CSN—the College Satellite Network—presented its first event in 1985, ***The Congress: Is It Working?*** to one hundred campuses. In 1986, several events went to 500 campuses. The 1987-88 season will feature six interactive teleconferences aimed at student audiences that vary from a program on AIDS and one on drugs to a coverage of the New Hampshire Primary. Six more events will feature current hit recording artists. In the future CSN plans to go from a monthly format to weekly or even daily programming. CSN's programming is free because it is underwritten by corporate sponsors. For more information call 312-878-7300 or write CSN, 5547 North Ravenswood, Chicago, IL 60640-1199.

CN—Campus Network—uses a different approach by delivering its programs through two services: the NCTV (National College Television) and VideoCenter Events.

NCTV sends, by satellite, a four-hour package each week to 170 campuses. The campuses videotape the package and rebroadcast it over their own campus network and/or over local cablevision. The programming is primarily entertainment and keyed to the younger college-age group. A place is left at frequent periods to allow colleges to insert local announcements and updates. Most colleges replay the package several times during the week. CN claims NCTV programs currently reach two million students weekly and another four million people in cable homes.

VideoCenter Events, the second CN offering, operates much like a teleconference though some events are not interactive. During the Fall 1986 semester such events as two feature films, a concert, a back-to-school video dance party, and an interactive debate on pornography were offered. CN plans to offer monthly events in the immediate future and eventually move to weekly programming.

CN's affiliates receive NCTV programming free since it is underwritten by corporate sponsors. VideoCenter Events charges vary from program to program and range from $100 to $500. A feature film costs $75. For more information on CN's programming, call 800-223-1331, or write to Campus Network, 114 Fifth Avenue, New York, NY 10011.

College and University Consortia

There are hundreds of teleconferences offered every year for business, language, engineering, health, continuing education, and many other disciplines. These are often designed for a person practicing a profession in the discipline rather than for the teacher of a discipline, but almost every college department can benefit from these offerings if the information about them is collected and disseminated. There are several consortia developing around academic disciplines, but two major consortia are worth describing in some detail because of the quality and scope of their programming.

NUTN—National University Teleconference Network—is a non-profit consortium currently with 170 member colleges and universities that, unlike CSN and CN, does not produce its own programs but shares programs by satellite that are produced by member institutions. The NUTN main office facilitates and publicizes teleconferences, but the member colleges put together the programs. The varied membership results in varied programming ranging across a whole host of topics.

On the average, NUTN member colleges pay $200 to $500 to receive a teleconference that NUTN sponsors though the range may be from $100 to $1,000 depending on the event. NUTN generally assumes that a college will pick up the cost for the college staff to view, but just as happens in a non-satellite conference, students and outsiders will pay a fee for the teleconference. However, it is a local decision whether a college wishes to recover its costs through user fees. Occasionally a sponsor will underwrite costs for NUTN and the teleconference will be free. For example, recently the *Christian Science Monitor* sponsored a free international teleconference on journalism.

A college does not have to belong to NUTN to receive teleconferences but generally the teleconference fee is doubled for non-members. The full membership annual fee is $1,500 with a one-time initiation fee of $800. For this fee NUTN provides such support services as training, marketing, programming aid, and technical advice. For more information, call 405-624-5191 or write National University Teleconference Network, 330 Student Union, Oklahoma State University, Stillwater, OK 74078.

NTU-National Technological University—started about five years ago when 24 universities including Georgia Tech, Michigan, the University of South Carolina, and Stanford, among others, began offering business and engineering courses to students and practicing engineers using their own uplinks. Students taking classes via satellite get the same syllabus, do the same homework, and take the same tests as those students who are in the classroom where the course originates. The big difference is that a student can receive a degree from NTU without leaving the receive site. More information can be obtained by contacting one of the participating universities.

Many other networks have emerged that have developed around special interests in colleges. *Orbit* lists regularly scheduled satellite programming for eighteen educational service channels. For example, there is a University Teleconference Network (UTN), a Health Service Network (HSN), and PBS's The Learning Channel that specializes in delivering telecourses. Most educators are familiar with telecourse programming over broadcast and cablecast channels since some 1,000 colleges and universities offer such courses. What many do not realize is that telecourses can be received by satellite as well. It is now possible for colleges that have not had the cooperation of local broadcasters and cablecasters to develop distant learning program centers by using satellite transmission directly.

Commercial Companies That Assist In Teleconferencing

PSSC—Public Service Satellite Consortium—is an example of a broker that doesn't produce teleconferences but offers training, technical support, technical publications, and assistance in planning. Membership dues are $500 per year and worth the money for those who want to start originating teleconferences and need advice, support, and marketing information.

Newly Developing Networks

Several consortia are forming to develop statewide networks. An example is our own Community College Satellite Network (CCSN) here in California. Currently we have 40 receive sites with plans to get a receive dish for every campus. The CCSN masterplan calls for a fully functioning permanent state network to be in place by 1988-89

with the intention to connect up with other state or regional community college networks in the future. CCSN anticipates there may be as many as 50 teleconferences offered annually on the network once it is fully developed. For more information about CCSN, phone 408-996-4426, or write CCSN, De Anza College, 21250 Stevens Creek Boulevard, Cupertino, CA 95014.

State legislatures are also getting more involved in large comprehensive networks. Michigan has before it a 13.2 million dollar proposal to connect the four major universities so they can deliver programming directly to business and industry. New York and Kentucky are considering networks to link *all* educational institutions and the public library system. New York is even considering purchasing their own satellite.

The federal government is also showing interest in satellite technology for education. Two bills are currently before the Congress to deliver instruction to public schools. Senator Edward Kennedy is proposing a $100 million "Star School" to be implemented over a five year period to deliver mathematics, science, and language instruction to schools to help rectify weaknesses.

Clearly, a momentum is building for the creation of interrelated satellite networks that ultimately can link educational institutions throughout the country. The potential of such networking is both staggering and challenging.

The ITC—Instructional Telecommunication Consortium—is probably the single best source of information about all forms of television development in community colleges. It is an affiliate of the American Association of Community and Junior Colleges and can be reached by phone at 202-293-7050 or by writing ITC, Suite 410, One Dupont Circle, N.W., Washington, D.C. 20036.

INSTITUTIONALIZING THE USE OF THE SATELLITE

For any innovation, someone in the organization must champion the introduction of that which is new. To organize and utilize satellite communication, a place in the college organization must be found that can plan, develop, implement, promote, and manage its great potential. At De Anza College the Learning Resource Center provides instructional support in many forms including print, audio-visual, computers, and television. Satellite programming is but one more learning resource in the arsenal currently managed by the Learning Resource Center. It seems appropriate for most colleges that this new medium take its place alongside the other media however the college is organized to manage them. One must admit that the push for developing satellite networks has not come from learning resource people, nevertheless this would seem to be the proper permanent home. Almost everyone in a college will probably become a user of satellite television at some time, and that is a compelling reason for locating it in a general service facility rather than in some other unit like a television department. Technicians are not required to oversee satellite reception since the technology has been simplified to a point where the user can be a layman. The involvement of technology experts is only necessary if a college starts originating teleconferences.

Should a college purchase a satellite dish or explore other options like leasing, renting, or borrowing? All of the above are possible but clearly purchasing is the best long term solution. Most cities of any size have stores that sell and install satellite dishes at prices starting at about $2,000. Two caveats: make sure the installation site is properly checked out for possible microwave interference and make sure to purchase a dish that will receive *both* the C-band and Ku-band satellites. Most commercial television is on C-band satellites but Ku-band transmission is newer and will eventually result in lighter, cheaper, better, and more accessible satellite systems. It is a little more expensive to get this dual capability but well worth it.

While the dish you buy usually comes with enough cable to allow you to plug right into a monitor and start receiving, there are other things to consider in a permanent setup. A comfortable viewing room appropriate to the kind of program being received is important. People in groups do like large screens better than regular sized monitors. If a concert is being viewed, good sound equipment is important. Lighting may be important for certain programming. An interactive program requires that a telephone be available and microphones may also be necessary. Finally, an experienced site coordinator needs to oversee the preparations and the conduct of special events and teleconferences. However, none of these requirements are particularly unusual for those who plan other kinds of college events.

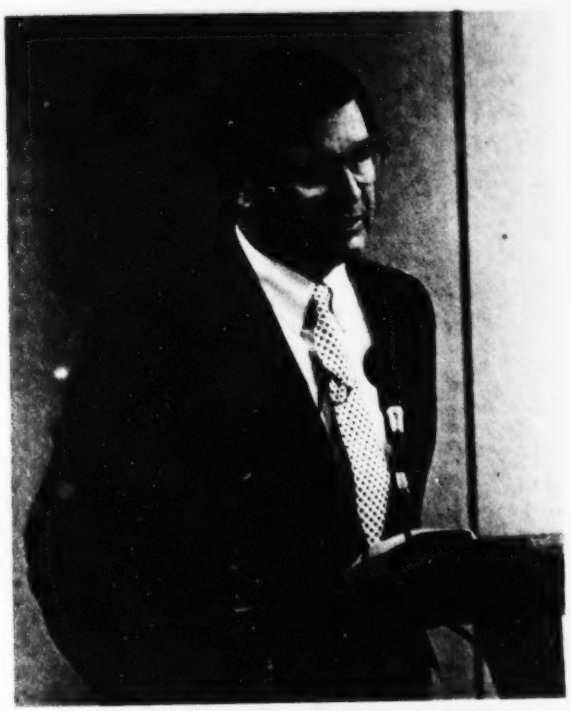
While the emphasis in this article has been on *receiving* by colleges, *originating* will become commonplace as the cost of uplink transmitters continues to decline sharply. Colleges that have a curriculum in television production already have most of the equipment for producing teleconferences. Either permanent or portable uplink dishes (they are similar in appearance to the receive dish) need only be added to existing television studios for a college to become an origination site. The faculty and students in television classes will find it an easy transition to producing teleconferences. The cost of the uplink in 1987 is in the $200,000 range, but that price will continue to fall. An option for the time being is to borrow an uplink. There are several uplink transmitters in Silicon Valley business and government facilities near De Anza College, and the college has produced several teleconferences on borrowed uplinks. In fact, the California Community College Satellite Network currently depends entirely on donated uplinks, or very inexpensive rental of uplinks, for all of their transmission.

THE 1990s

The colleges that recognize the opportunities for improving their educational programs and community services through this new medium will enjoy the challenge of shaping the future of educational satellite programming and

There's
In Ou

De Anza College President Bob DeHart starts the third teleconference, sponsored by the Academic Senate of California Community Colleges, by introducing President Mark Edelstein, President-Elect Karen Sue Grosz, and Vice President Larry Miller.



Teleconferencing can be a powerful delivery system for staff development. ACCCA sponsored one of the spring teleconferences titled "Enhancing College Effectiveness" featuring Professor George Baker from the University of Texas at Austin. Eighty colleges had managers in attendance at forty receive sites.

State Chancellor Josh Smith and Chancellor moderator Bob DeHart, President of De Anza on the Community Colleges Satellite Networ Community Colleges Consult."

Satellite Future!

UNITY
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All three of the demonstration teleconferences originated in the "Electronic Classroom" at Tandem Computers in Cupertino. The major statewide organizations endorsed the project and their leadership often were studio participants. Sitting in the front row of the "The Community Colleges Consult" teleconference were David Viar of CCCT, Larry Miller of ASCCC, Lois Callahan of CACC, David Rubiales of CTA and Tom Van Groningen of ACCCA.

ver, President of the CCC CEO organization flank , in the first ever interactive video teleconference 7, 1987. The title of the teleconference was "The

The Community College Satellite Network had participation from the major statewide organizations through an advisory committee chaired by Project Director Bob DeHart. However, the ACCCA Management Development Commission provided the leadership for getting the project underway. ACCCA President Tom Van Groningen explained ACCCA's active interest and support for the Network in kicking off the management development teleconference.

reap the benefits that early adopters generally experience.

Though education is off to a slow start when compared to the sophisticated use of satellite communication by business, government, and the media, colleges will rapidly catch up simply because satellite communication is so effective and is becoming so inexpensive. The ability for college presidents in a large state to meet without arduous and costly travel, the ability of colleges to share faculty development workshops, the advantage of video library networking, the ability of faculty to see exemplary instructional programs located in the remotest colleges, the opening up of the world of culture, entertainment, and education to rural colleges, the increased availability of telecourses at lower shared costs, and offering teleconferences to the people of our communities for all kinds of occupations and public interests—for all these compelling reasons and more, this technology will rapidly develop on college campuses. And the technology itself will continue to improve so that we can expect the screens to get larger and sharper, the telephone linkages more responsive and natural sounding, and sound systems to achieve all the qualities of actual presence.

There will be a satellite in every college's future.

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1. Slade, Arthur, and Sanders, Kevin. "The Electronic Campus," *Campus Activities* Programming, Vol. 19, No. 3, Fall, 1986.
2. Cross, Thomas. "Teleconferencing Will Play A Key Role In Services From Intelligent Buildings," *Communication News*, February, 1985, p.78.
3. Black, Randall. "Teleconferencing: Send Your Image, Not Yourself," *Science Digest*, March, 1984, p.5.
4. *Satellite ORBIT*, CommTele Publishing Company, P.O. Box 53, Boise, ID 83707. Published monthly, 1 Year $48. 1-800-792-5541.

APPENDIX

Costs for Acquiring a "Good, Better, Best" Satellite Dish

The attached correspondence is just one example of price quotations on satellite dishes. Your local dealers will probably bracket these prices.

If you want more information on a group buy organized by some northern California colleges, contact

Don Kirkorian, Executive Director
(707) 864-7000, extension 250

or

Bob Wyman, Project Director
Community College Satellite Network
(916) 971-1555

CoitCom
COIT COMMUNICATIONS, INC.
1580 Gilbreth Road ■ Burlingame, CA 94010
415/369-4477

Mr. Mike Holler
De Anza College
21250 Stevens Creek Blvd.
Cupertino, Ca. 95014

Dear Mike,

Enclosed are the three proposals on the "Good, Better, Best" Satellite systems that you requested.

System I, is a single receiver system with C and KU Band capabilities. This system can be expanded and additional receivers may be added at the cost of the extra receiver.

System II, is a dual receiver system which is interfaced so that either receiver can control the position of the system. This system will give you excellent C and KU Band reception.

System III, is the very best system money can buy. The system is interfaced and has maximum gain and efficiency on C and KU Band.

CoitCom recommends the Chaparral product line because they manufacture all components supplies. The system is matched (antenna, receiver, and C/KU feed) to obtain the best signal to noise ratio available. Because Chaparral manufactures all the components, there are no interface problems or mismatching problems.

Complete professional installation and service are also available. A complete list of referrals is available upon request.

Sincerely,

John Duggins
JD/ld

CoitCom

COIT COMMUNICATIONS, INC.

1580 GILBRETH ROAD
URLINGAME, CA 94010
415 / 369-4477

5154

DATE	TIME
REPRESENTATIVE	
TAKEN BY	DATE
WI ☐ TEL ☐ CC ☐	

SYSTEM I

CUSTOMER	DE ANZA COLLEGE		DATE 1-12-87
ADDRESS	21250 STEVENS CREEK BLVD.	X STREET	PHONE (HM)
CITY/STATE/ZIP	CUPERTINO, CA.		PHONE (WK)

EQUIPMENT & INSTALLATION

ANTENNA	1 - 8½' C/KU Band High Performance Chaparral Antenna	$695	00
RECEIVER	1 - Chaparral Cheyenne Satellite Receiver	789	00
LOCATOR	1 - 24" ball Actuator	268	00
LNA LNB	1 - Bullseye Feed with 2-75° C Band LNB's, 1-150° KU Band LNB	998	00
CABLE LENGTH	200' all-in-one cable with connectors	200	00
EXTRA LINKS			
REMOTE CONTROLS			
OTHER	1 - Chaparral 4/12 Switch	149	00
	1 - V/H Relay	129	00
	EQUIPMENT SUB TOTAL	$3228	00
	SALES TAX	225	96
INSTALLATION TYPE:			
No. TV's	No. VCR's No. STEREO's		
PERMIT CHARGES			
OTHER			
	TOTAL	$3453	96

COITCOM WARRANTY: ALL SATELLITE EQUIPMENT IS WARRANTED FOR ONE YEAR PARTS AND LABOR EXCEPT FOR DAMAGE INCURRED BY CUSTOMER OR ACTS OF GOD. COITCOM WILL PROVIDE FREE AT SITE LABOR SERVICE FOR 90 DAYS AFTER THE SYSTEM HAS BEEN INSTALLED.

PAYMENT TO BE MADE AS FOLLOWS: _____

CONDITIONS: [illegible]

ACCEPTANCE OF PROPOSAL: The above prices, specifications are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Signature _____ SALES TECHNICIAN

Date of Acceptance _____

Signature _____ CUSTOMER

CoitCom

COIT COMMUNICATIONS, INC

1580 GILBRETH ROAD
BURLINGAME, CA 94010
415 / 369-4477

5155

DATE	TIME
REPRESENTATIVE	
TAKEN BY	DATE
WI ☐ TEL ☐ CC ☐	

SYSTEM II

CUSTOMER	DE ANZA COLLEGE		DATE 1-12-87
ADDRESS	21250 STEVENS CREEK BLVD.	X STREET	PHONE (HM)
CITY/STATE/ZIP	CUPERTINO, CA.		PHONE (WK)

EQUIPMENT & INSTALLATION

ANTENNA	1 - 10½' Chaparral Cosmos C/KU Band High Performance Antenna	$850	00
RECEIVER	2 - Chaparral Cheyenne Satellite Receivers	1578	00
LOCATOR	1 - 24" ball Actuator	268	00
LNA LNB	1 - Shotgun Feed with 2-75° C Band LNB's, 1-150° KU Band LNB	998	00
CABLE LENGTH	200' all-in-one cable with connectors	200	00
EXTRA LINKS			
REMOTE CONTROLS			
OTHER	1 - Chaparral 4/12 Switch	149	00
	1 - Chaparral V/H Relay (2 Receiver Matrix)	129	00
	EQUIPMENT SUB TOTAL	$4172	00
	SALES TAX	292	04
INSTALLATION TYPE			
No TV's	No VCR's No STEREO's		
PERMIT CHARGES			
OTHER			
	TOTAL	$4464	04

COITCOM WARRANTY: ALL SATELLITE EQUIPMENT IS WARRANTED FOR ONE YEAR PARTS AND LABOR EXCEPT FOR DAMAGE INCURRED BY CUSTOMER OR ACTS OF GOD COITCOM WILL PROVIDE FREE AT SITE LABOR SERVICE FOR 90 DAYS AFTER THE SYSTEM HAS BEEN INSTALLED

PAYMENT TO BE MADE AS FOLLOWS: _____

ACCEPTANCE OF PROPOSAL: The above prices specifications are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above

Signature _____ SALES TECHNICIAN

Date of Acceptance _____

Signature _____ CUSTOMER

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DATE	TIME
REPRESENTATIVE	
TAKEN BY	DATE
WI ☐ TEL ☐ CC ☐	

SYSTEM III

CUSTOMER	DE ANZA COLLEGE		DATE 1-12-87
ADDRESS	21250 STEVENS CREEK BLVD.	X STREET	PHONE (HM)
CITY/STATE/ZIP	CUPERTINO, CA.		PHONE (WK)

EQUIPMENT & INSTALLATION

ANTENNA	1 - 12' Chaparral Cosmos C/KU High Performance Antenna	$1082	00
RECEIVER	2 - Chaparral Sierra II Receivers	2570	00
LOCATOR	1 - 24" ball Actuator	268	00
LNA, LNB	1 - Shotgun Feed With 2-75° C Band LNB's, 1-150° KU Band LNB	1098	00
CABLE LENGTH	200' all-in-one cable with connectors	200	00
EXTRA LINKS			
REMOTE CONTROLS			
OTHER	1 - Chaparral 4/12 Switch	149	00
	1 - Chaparral V/H Relay (2 Receiver Matrix)	129	00
	EQUIPMENT SUB TOTAL	$5496	00
	SALES TAX	384	72
INSTALLATION TYPE			
No. TV's	No. VCR's No. STEREO's		
PERMIT CHARGES			
OTHER			
	TOTAL	$5880	72

COITCOM WARRANTY: ALL SATELLITE EQUIPMENT IS WARRANTED FOR ONE YEAR PARTS AND LABOR EXCEPT FOR DAMAGE INCURRED BY CUSTOMER OR ACTS OF GOD. COITCOM WILL PROVIDE FREE AT SITE LABOR SERVICE FOR 90 DAYS AFTER THE SYSTEM HAS BEEN INSTALLED.

PAYMENT TO BE MADE AS FOLLOWS: _____

ACCEPTANCE OF PROPOSAL: The above prices, specifications are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Signature _____ SALES TECHNICIAN

Date of Acceptance _____

Signature _____ CUSTOMER